

REMARKS

Claims 1-71 are presently pending in this application. Claims 20, 41 and 52 have been amended in this paper.

In the Office Action mailed April 23, 2002, claims 1-71 were rejected. More specifically, the status of the application in light of this Office Action is as follows:

- (A) Claims 1-7, 14-26, 31-59, 61-69 and 71 stand rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent No. 6,218,309 to Miller et al. ("Miller"); and
- (B) Claims 8-13, 27-30, 60 and 70 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Miller.

The undersigned attorney wishes to thank the Examiner for engaging in a brief telephone conference on August 22, 2002 to discuss the above rejections. During the telephone conference, several features distinguishing the pending claims from the cited reference were identified and discussed. In a telephone message to the undersigned attorney by the Examiner, the Examiner indicated that these distinctions would reflect favorably on a subsequent disposition of the claims. Accordingly, the following remarks summarize and expand upon the items discussed in the August 22 telephone conference.

A. Response to the Section 102 Rejections

Claims 1-7, 14-26, 31-59, 61-69 and 71 were rejected under 35 U.S.C. § 102(a) as being anticipated by Miller.

1. Claim 1 is Directed to a Method for Processing a Microelectronic Substrate by Removing Conductive Material With an Electrolytic Fluid

Claim 1 is directed to a method for processing a microelectronic substrate and includes disposing an electrolytic fluid adjacent to a conductive material of the microelectronic substrate. The conductive material has a first surface in a first plane and a recess in the first surface, with the recess being bounded by a second surface in a second plane. The conductive material further has a corner between the first and second surfaces. The method further includes removing at least part of the conductive material from the corner by positioning first and second electrodes in fluid communication with the electrolytic fluid and coupling at least one of the electrodes to a source of electrical potential.



2. Miller Discloses a Technique for Rounding Silicon Material With a Plasma Etch Process

Miller discloses in Figures 3C-3D rounding the corner of a silicon layer adjacent to shallow trench isolation features 230, 231. A pad oxide layer 216 is positioned above the silicon layer 218, and a nitride layer 214 is positioned above the pad oxide layer 216. A multi-step plasma etch process is used to selectively remove materials from each layer. For example, a CF₄-based etchant source gas is used to remove material from the nitride layer 216, and a CH₂F₂ and/or CHF₃-based etchant source gas is used to remove material from the pad oxide layer 216. A Cl₂-based etchant source gas is used to remove material from the silicon layer 218 to form the rounded corner. (Miller at col. 7, l. 34 – col. 8, l. 34.) To etch the materials, a source gas is flowed into a chamber, the pressure is stabilized within the chamber, and the plasma is ignited (Miller at col. 5, ll. 2-4). Ions from the plasma are then accelerated toward the substrate to etch material on the substrate (Miller at col. 5, ll. 5-9).

3. Miller Fails to Provide Support for a Rejection Under Section 102

MPEP § 2131 provides that a claim is anticipated under Section 102 only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. Miller does not disclose, *inter alia*, "disposing an electrolytic fluid adjacent to a conductive material of the microelectronic substrate," "removing at least part of the conductive material from [a] corner [of the microelectronic substrate] by positioning first and second electrodes in fluid communication with the electrolytic fluid," and "coupling at least one of the electrodes to a source of electrical potential." Instead, Miller discloses a multi-step plasma etch process, as described above. Because Miller fails to disclose all the elements of claim 1, the rejection of claim 1 is unsupported by the applied reference and should be withdrawn.

Claims 2-7 and 14-19 depend from claim 1 and accordingly include, *inter alia*, the features described above with reference to claim 1. For, *inter alia*, the reasons discussed above, Miller fails to disclose all the elements of these claims and accordingly, the Section 102 of these claims should be withdrawn.

Claim 20, as amended, includes features generally similar to those described above with reference to claim 1. Accordingly, for the reasons discussed above and for the



additional features of claim 20, Miller fails to provide support for a Section 102 rejection of this claim. Therefore, the Section 102 rejection of claim 20 should be withdrawn.

Claims 21-26 and 31-36, which depend from claim 20, include, *inter alia*, the features described above with reference to claim 20. Accordingly, Miller fails to provide support for a Section 102 rejection of these claims and the Section 102 of these claims should be withdrawn.

Claim 37 includes features generally similar to those described above with reference to claim 1. For the reasons described above with reference to claim 1 and for the additional features of this claim, Miller fails to support a Section 102 rejection of claim 37. Accordingly, the Section 102 rejection of claim 37 should be withdrawn.

Claims 38-40, which depend from claim 37, include, *inter alia*, the features described above with reference to claim 37. Accordingly, Miller fails to support a Section 102 rejection of these claims and therefore the Section 102 rejection of these claims should be withdrawn.

Claim 41, as amended, includes features generally similar to those described above with reference to claim 1. Accordingly, for the reasons described above and for the additional features of claim 41, Miller fails to adequately support a Section 102 rejection of claim 41. Therefore, the Section 102 rejection of claim 41 should be withdrawn.

Claims 42-51, which depend from claim 41, include, *inter alia*, the features described above with reference to claim 41. Accordingly, for the reasons described above and for the additional features of these claims, Miller fails to provide support for a Section 102 rejection of these claims. Therefore, the Section 102 rejection of these claims should be withdrawn.

Claim 52, as amended, includes features generally similar to those described above with reference to claim 1. For the reasons described above with reference to claim 1, and for the additional features of claim 52, Miller fails to adequately support a Section 102 rejection of claim 52 and therefore the Section 102 rejection of claim 52 should be withdrawn.

Claims 53-59 and 61-63, which depend from claim 52, include, *inter alia*, the features described above with reference to claim 52. Accordingly, the Section 102 rejection of these claims on the basis of Miller is also unsupported and should be withdrawn.



Claim 64 includes features generally similar to those described above with reference to claim 1. For the reasons described above and for the additional features of claim 64, the Section 102 rejection of claim 64 is unsupported by Miller and should be withdrawn.

Claims 65-69 and 71, which depend from claim 64, include, *inter alia*, the features described above with reference to claim 64. Accordingly, the Section 102 rejection of these claims is unsupported by Miller and should be withdrawn.

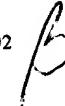
B. Response to the Section 103 Rejections

Claims 8-13, 27-30, 60 and 70 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Miller. In brief, the Office Action contends that the specific compositions of the electrolytic fluid and methods for transmitting current through the electrolytic fluid recited in those claims would be obvious in light of Miller's disclosure. As described above, however, Miller fails to disclose an electrolytic fluid and instead discloses a plasma etch process. It would not be obvious to one of ordinary skill in the art to replace the plasma etch chemicals and/or process techniques with those disclosed in the claims identified above because these chemicals and techniques are directed to entirely different processes.

A *prima facie* case of obviousness under Section 103 requires a showing of motivation in the applied references to modify or combine them to achieve the features of the rejected claims. As described above, a *prima facie* case has not been established with respect to these claims because, *inter alia*, no motivation has been provided for applying plasma etch chemicals and techniques to electrolic processes. Accordingly, the Section 103 rejection of these claims should be withdrawn.

C. Conclusion

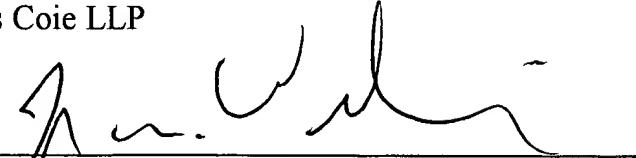
In light of the foregoing amendments and remarks, all of the pending claims are in condition for allowance. Applicants, therefore, request reconsideration of the application and an allowance of all pending claims. If the Examiner wishes to discuss the above-noted distinctions between the claims and the cited references, or any other distinctions, the Examiner is encouraged to contact John Wechkin by telephone.



Additionally, if the Examiner notices any informalities in the claims, he is also encouraged to contact John Wechkin to expediently correct any such informalities.

Respectfully submitted,

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JMW:ri

Enclosures:

Postcard

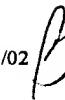
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Appendix (Marked-up version of claims)

Petition for Extension of Time

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Appendix – Claims
Marked to Show Changes

20. (Amended) A method for processing a microelectronic substrate, comprising:

disposing a generally non-conductive material adjacent to a conductive material of the microelectronic substrate;

forming a recess extending through the generally non-conductive material and into the conductive material, the recess defining a corner at least proximate to an interface between the conductive material and the generally non-conductive material; and

removing at least part of the conductive material from the corner to at least partially blunt the corner by exposing the corner to an electrical potential via an electrolytic fluid.

41. (Amended) A method for processing a microelectronic substrate, comprising:

forming a recess in a conductive material of the microelectronic substrate, the recess defining a corner at an intersection of the aperture and a plane of the conductive material;

forming a conductive microelectronic feature in the recess; and

controlling electromagnetic emanations from the conductive microelectronic feature by rounding the corner defined by the recess, wherein rounding the corner includes electrically coupling a source of electrical potential to the corner via an electrolytic fluid to oxidize the conductive material, and removing oxidized material from the corner by exposing the oxidized material to an etchant.

52. (Amended) A microelectronic substrate formed by a process, comprising:

disposing a generally non-conductive material adjacent to a conductive material of the microelectronic substrate;



forming a recess extending through the generally non-conductive material and into the conductive material, the recess defining a corner at least proximate to an interface between the conductive material and the generally non-conductive material; and

removing at least part of the conductive material from the corner to at least partially blunt the corner by exposing the corner to an electrical potential via an electrolytic fluid.